

# THE ATOM

Los Alamos Scientific Laboratory

May, 1966

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LOS ALAMOS NATIONAL LABORATORY



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# THE ATOM

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## COVER:

These pigeonholes are symbolic of Mail and Records, but the ubiquitous LASL service group has many responsibilities other than delivering mail. A story starts on Page 3.

## BACK COVER:

One of the rare appearances of Jarvey the Jare of the Jemez was captured by Photographer Bill Jack Rodgers shortly after Easter. The mountain-side bunny is visible from areas of Baranca Mesa, East Road and White Rock when the snow melt progresses in a rabbit-like manner. Jarvey's high-altitude domicile is the open meadow on Tschicoma Mountain.

# Bradbury Receives DOD Service Medal

Dr. Norris E. Bradbury, LASL director, was presented the Department of Defense Distinguished Service Medal at a ceremony in the Pentagon on April 27.

The presentation was made by Dr. John S. Foster, director of Defense Research and Engineering.

Also attending the ceremony were Sen. Clinton P. Anderson, chairman of the Committee on Aeronautics and Space Sciences and a member of the Joint Committee on Atomic Energy; Dr. Glenn T. Seaborg, chairman of the U.S. Atomic Energy Commission; and high-ranking military officials.

The citation, signed by Secretary of Defense Robert S. McNamara, read:

"To Dr. Norris E. Bradbury for exceptionally meritorious civilian service to the Armed Forces of the United States of America in a position of great responsibility as Director of Los Alamos Scientific Laboratory from 1945 to 1965.

"The Laboratory, under Dr. Bradbury's direction, not only developed the thermonuclear bomb but has developed a complete spectrum of nuclear weapons for tactical air defense and strategic air weapons.

"The outstanding international reputation of the Los Alamos Scientific Laboratory, is directly attributable to its exceptional leadership. The United States is indebted to Dr. Bradbury and his Laboratory to a very large degree for our present nuclear capability. His achievements reflect the highest credit upon himself and the United States, and I am pleased to award him the Department of Defense Distinguished Service Medal."

In another Washington ceremony, this one on April 26, Stanislaw Ulam, LASL research advisor, was one of 42 new members named to the National Academy of Science. Dr. Ulam has been at LASL since 1944 and is credited with a significant role in the development of the thermonuclear weapon. He was named group leader of the Theoretical Physics Division in 1946, a post he held until his selection as research advisor in 1957.

## short subjects

James S. Church, 43, head of the plastics section in CMB-6 and a Laboratory staffer since he came to Los Alamos with the Army during the war,



died April 22 of an apparent heart attack. James Taub, CMB-6 Group Leader, who had worked with Church since 1945, said he considered him "one of the outstanding people in plastics research in the country." A 1943 graduate of Waynesburg College

in Pennsylvania, Church was a member of the Society of Plastics Engineers and was a participant in the Visiting Scientist Program of the New Mexico Academy of Science. He was active in Boy Scout work and a Mason. Church was mustered out of the Army's Special Engineer Detachment that worked at Los Alamos during the war and returned immediately as a civilian employe of the University in March 1946. Survivors include his wife Esther and children David, 16; Elizabeth, 10; Paul, 8, and Alan, 6. Services were April 25 at Bethlehem Lutheran Church.

Three members of the Public Relations Department staff are leaving the Laboratory this month. **Earl Zimmerman**, Atom editor, joins General Atomic in San Diego, Calif. **Peter Mygatt**, who has handled press relations for PUB, will become public information representative for the AEC in Panama. **Dudley Lynch**, assistant editor of The Atom, has resigned to accept a fellowship for post-graduate study in journalism at the University of Texas.

A two-story annex to the Computer Building in TA-3 will be constructed this year by the J. R. Brennand Construction Company of Santa Fe. The firm's bid of \$137,000 was the lowest of four received by the Atomic Energy Commission for the project, which will add a total of 7,000 square feet to the Lab's computer facilities. The annex is scheduled for completion by late autumn.

continued on next page

## shorts . . .

continued from preceding page

**Dr. John Harry Williams**, 58, a member of a original Los Alamos scientific staff and a former AEC commissioner, died April 18 in Minneapolis, where he was a professor of physics at the University of Minnesota. Williams was at Los Alamos from 1943 to 1946 and was a Laboratory consultant at the time of his death. In addition to membership on the AEC, Williams had served as director of the Commission's Division of Research and was a current member of the AEC's General Advisory Committee. He was also president of the American Physical Society.

A grant of \$103,372 to the Espanola School District has been made by the U.S. Office of Education under the program that gives financial help to school districts with enrollments swollen by families of Federal employees. The "impacted area" assistance in Espanola comes partially because of the large number of Los Alamos employees who reside in the district. A four-classroom and "cafetorium" addition now is under construction in the district's Fairview Elementary School, which just opened in January of this year.

Two LASL staff members will be special judges at the International Science Fair in Dallas, Texas, on May 11. **Dr. Elizabeth Graves**, P-6 Group leader, and **Dr. John Spalding** of H-4 will be members of an Atomic Energy Commission judging panel that will evaluate Science Fair exhibits related to nuclear science or its applications. Ten top winners will receive an expenses-paid "Nuclear Research Orientation Week" at Argonne National Laboratory in August. Mrs. Graves will evaluate nuclear physics presentations; Spalding will study exhibits dealing with radiobiology and genetics.

**Trinity Drive**, the community's main east-west traffic artery, is being widened to accommodate four lanes of traffic. The work is being done by the Zia Company's subsidiary, Los Alamos Constructors, Inc., accomplishing an improvement that had been deferred for years, pending the removal of Sundt housing along Trinity. The job, which will progress west from Twentieth Street to Diamond Drive, is scheduled for completion by mid-July.

Sixteen engineers and technicians, employees of ACF Industries at the Nuclear Rocket Development Station in Nevada, are transferring their employment to LASL. They are among nearly 100 ACFI employees who are transferring to new employers in anticipation of mothballing LASL's R-MAD (Reactor-Maintenance, Assembly and Disassembly) building and of consolidation of both rocket reactor and engine assembly and disassembly in the new E-MAD (E for engine) building. The E-MAD building is operated by Aerojet-General, prime contractor for NERVA. It is expected that by mid-1968 all reactor assembly and disassembly work at NRDS will be taking place in the new structure, and in the interests of economy, operations at R-MAD will be closed down. Under the plans being worked out, Aerojet will offer to 54 ACFI technicians; Pan Am, 16 machinists and support employees; LASL, 16 engineers and technicians; and ACFI, Albuquerque, 16 supervisors, technicians, and support workers. The transfers are expected to be completed by July 1.

**Julian Mack**, who headed the Optics Group that made the official photographic report of the Trinity test, died April 14 in Madison, Wis., where he had been a member of the University of Wisconsin Physics Department staff since 1930. He was 62, and had been ill about six months. A spectroscopist, Mack came to Los Alamos early in the atomic bomb project and was in charge of optical instrumentation, high-speed photography and special photography. Many of the techniques developed by Mack and his optics specialists have become standards in the high-speed photography field. After the war, Mack returned to teaching at Madison. From 1959 to 1961 he was science attache for Scandinavia at the U.S. embassy in Stockholm, Sweden. The Optics Group evolved into present-day Group GMX-9, which is headed by Berlyn Brixner, a wartime associate of Mack's.

**Nelson Jarmie**, P-DOR, served as a visiting lecturer April 21 and 22 at Hastings College, Hastings, Neb. Jarmie's visit was sponsored by the American Association of Physics Teachers and the American Institute of Physics.

**B**Y A FEW MINUTES of eight on Monday morning, when Laboratory-bound traffic has developed into a three-lane cataract, a cadre of employees is already hard at work in the Administration Building—in an oblong, desk-filled, fourth-floor chamber that resembles a newspaper city room.

Here, the official day had started shortly after 6 a.m. for Pat McAndrew, an ex-WAC tech sergeant who "would rather work than eat"—and finds that LASI's Mail and Records Group, which she heads, often provides fulfillment for her druthers. An hour later, five M&R supervisors had arrived, soon followed by a messenger, who had stopped by the Los Alamos Post Office en route to work. There, he had picked up four sacks of LASI-bound mail.

The day previously, another employee had sorted 17 sacks of Lab mail into route bins stacked atop each other in the M&R mail room. With Monday's

arrivals, the mail room now looked like a pennant winner's ticket office before the World Series.

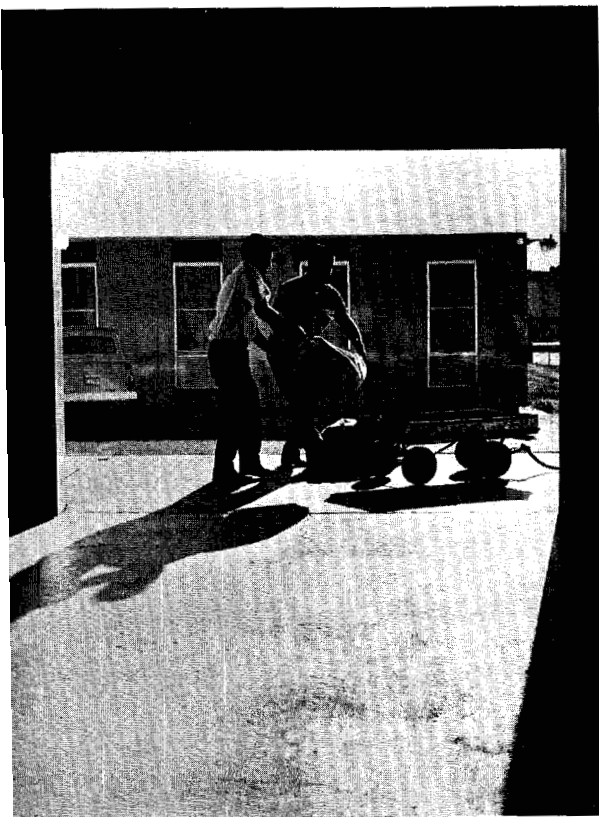
Faced with this scene, the M&R people had immediately and methodically descended on the motley pile, as if suddenly gripped by the consequences of one more mail bag's arrival. And by eight o'clock, a semblance of order has been restored.

Martin Aguilar, one of M&R's 12 messengers, is soon on his way to the Engineering offices with a blueprint, a catalog from Pulse Engineering of Santa Clara, Calif., a copy of the latest Federal Register and a grab bag assortment of other accumulated mail. Fidel Alarid, a satchel of mail thrown over his shoulder, heads for a delivery wagon. His destinations include the CMR and Physics Buildings, the shops and the cafeteria—stops on one of M&R's four motorized routes. Other messengers, too, are underway. M&R has survived yet another Mon-/continued



*The  
Group Behind  
The 'Pogo Cart'-Pushing Image  
Mail and Records*

By DUDLEY LYNCH



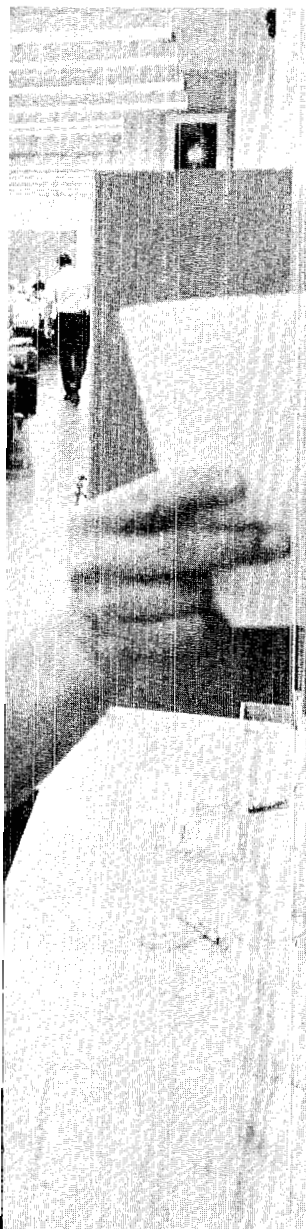
## **M&R**

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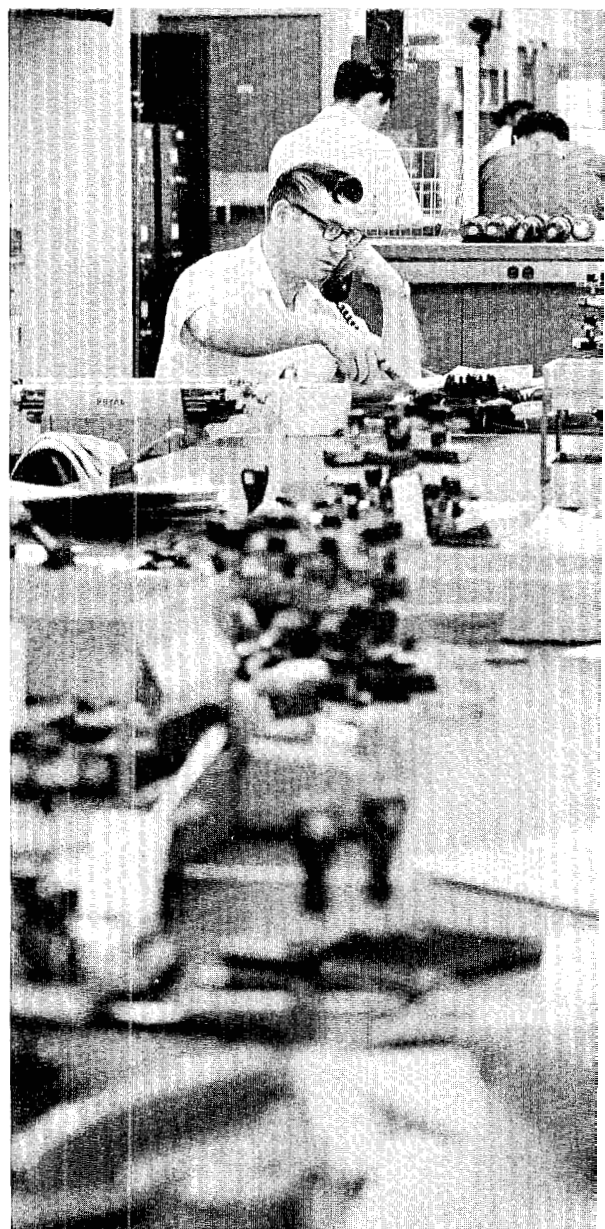
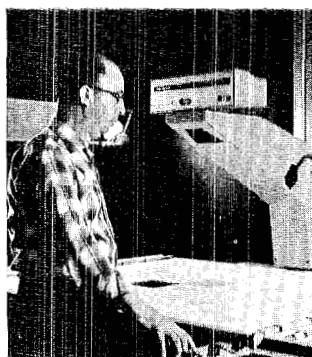
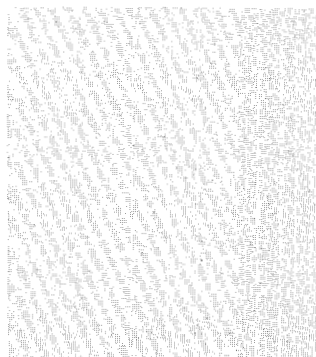
day morning—the busiest part of a busy week—and can now focus its attention on sundry other responsibilities that make this group a crucial Laboratory administrative service unit.

The duties checklist for this 57-employee group is far more extensive than meets the eye, both figuratively and literally. Only a fourth of the personnel are involved fulltime in mail delivery and pickup, the “pogo cart”-pushing image that is normally attached to Mail and Records.

As mail is being delivered, other M&R personnel may be microfilming important documents, destroying outdated ones, plotting removal of still others to a Federal Records center, sending top-secret teletype messages, cataloging classified materials, up-



In upper far left photograph, two M&R employees hoist mail sacks onto cart for trip to fourth-floor mail room. Once postal paraphernalia arrives, official mail is opened and sorted (lower far left), in this instance by (from left) Abe Lopez, Floyd Archuleta and Jacob Campos, employees in unclassified section. After processing, incoming pieces are placed in proper receptacles, as is being done by Manuel Garcia at left. There, at scheduled times each day, correspondence is retrieved by one of M&R's 12 messengers, several of whom are seen above waiting to begin routes. At same time, other M&R personnel may be microfilming (Johnnie Roybal at camera below) or handling classified materials, an activity supervised by Gilbert Ortiz, at right.

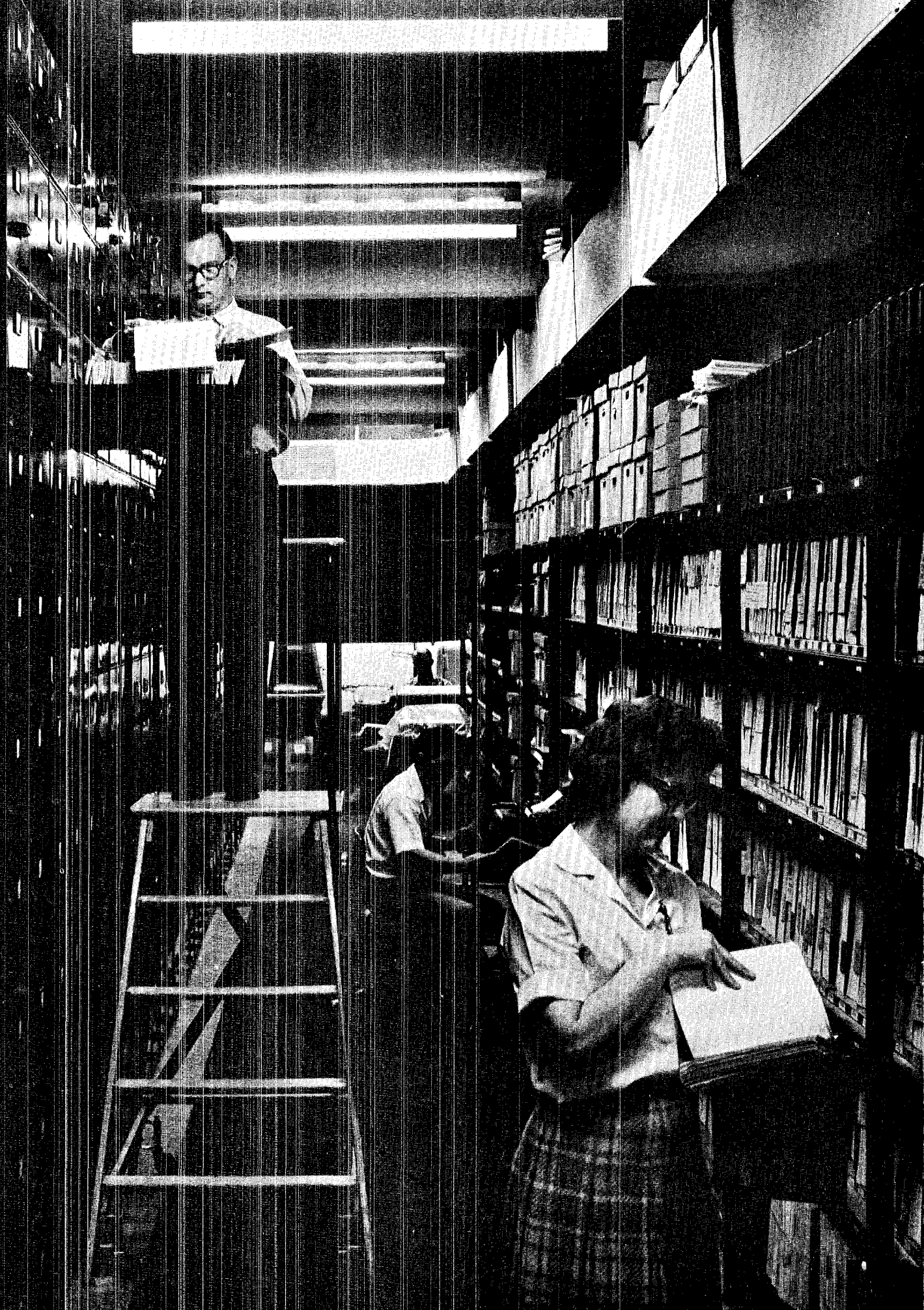


dating the Official Procedures manual, checking an out-of-town telephone number, determining the retention value of a purchase order, returning a letter to a secretary for corrections, checking a policy item before releasing another piece of correspondence.

Perhaps the biggest task involves the handling and storage of records, an undertaking that requires, as a prerequisite, a fastidious regard for detail and the patience of a rare-painting restorer.

The records management supervisor is David Heimbach, who has the faculty for getting as absorbed in an incoming prepaid freight record as a physicist can in a report on stress wave propagation. Heimbach, now in his eighth year of records management,

continued on page 7



presides over a domain of two impressive storage vaults containing 6,500 cubic feet of records, many of which are classified. One of the vaults parallels the main M&R quarters in the Ad Building; the other is at 180 7th Street, in a building shared with the AEC records section.

Among Heimbach's primary functions is deciding how long a record should be kept. "You have to consider, first of all," he says, "your statutes of limitations, both state and federal; you've got to consider your audit restrictions, limitations and requirements; you also have to consider historical, legal, statistical and mail and records values. Some materials we keep indefinitely, some of them are microfilmed, some of them we destroy after a certain length of time." He has on hand 240 "record retention and disposal authorizations," signed by up to seven persons, which tell him when he can destroy a document.

Under Heimbach's supervision, an average of 300,000 sheets of top-priority documents are microfilmed each year for deposit in the Emergency Relocation Center of the AEC's Albuquerque Operations Office. These are vital records and would be needed to reconstruct strategic parts of the Laboratory in case of war or peacetime disaster. The 75 to 100 rolls of microfilm used yearly for this purpose are exposed, processed, reviewed, packaged and dispatched by M&R's Johnnie Roybal.

The most sensitive facet of M&R's task is the message center. Located in a long, well-lit, electronics-equipment-filled room within the Laboratory, this operation provides teletype and telegram service for LASL, the local AEC, The Zia Company, the FBI, Civil Defense, Civil Service Commission and military reserve and national guard units in the area.

William Ebert, a onetime bookbinder who spent five years in cryptography during World War II and returned to the field after his discharge, serves as top secret crypto-control officer behind the center's vault-type door. Eight other employees share the 7 a.m. to 8 p.m. workday, which passes in virtual isolation; only the operators and a few others have full, free access.

All of M&R's activities have some sense of immediacy, but none to the degree of mail delivery. "If

Facing page: Thousands of cubic feet of records are stored in M&R's two cavernous vaults. File-lined chambers are bailiwicks of David Heimbach (on ladder), records management supervisor. In foreground is Blanche Gilman, assistant group leader. Floyd Archuleta is at typewriter.



From this office, Rudy Rivera directs pickup-and-delivery system that serves most areas of Laboratory with four deliveries daily. Pres Martinez (standing) is M&R messenger.

we get it today—we have to dispose of it today," says Mrs. McAndrew. "If we don't, it piles sky-high." The sheer volume of LASL mail alone assures the Los Alamos Post Office of a first-class rating, awarded only to offices with a \$50,000-a-year business. LASL's stamp purchases and fees provide over that amount.

Rudy Rivera, the mail room supervisor, who has been digging out from under Monday morning and late Friday afternoon avalanches for 14 years, takes pride in the quick delivery of both interoffice and incoming mail. His delivery force provides all Lab offices, with the exception of the GMX sites, which have their own messengers, with four pickups and deliveries daily. He adds: "The only mail we get that will take more than two hours to deliver is the mail that we get on the day's last round. This will be delivered the next morning."

In another area of M&R's "city room," Gilbert Ortiz, who spends part of his off-duty hours presiding over the Santa Fe County Commission, heads the Classified Records Section. He and his staff of eight are responsible for receiving and dispatching all classified materials for the Laboratory. This normally includes the receipt, inspection, processing and eventual filing of about 21,000 pieces of certified or registered mail and the dispatching—after careful cataloging and packaging—of another 13,000 pieces annually. Additionally, about 4,000 incoming teletype messages, of which more than 31,000 copies are sent to appropriate parties, are Ortiz' responsibility. They are also the responsibility of Miss Blanche Gilman, assistant M&R group leader, who, says Mrs. McAndrew, "eats, sleeps and drinks security regulations." Miss Gilman serves the classified section in a "watch-dog" capacity.

Most of the inbound classified documents come back to this section for storage. "We file about 35

continued on next page

# M&R

continued

Pat McAndrew, M&R group leader since 1949, came to Los Alamos as a WAC during Manhattan Project. Her capacious memory and penchant for detail are more or less legendary around Laboratory. Facing page: Work in M&R mail room goes on with exactitude of a baby's feeding schedule—and for similar reasons. One missed cycle and dozens of correspondence-crammed pigeonholes scream for attention.



cubic feet of records a year," says Ortiz, and adds, with his fingers crossed, "We are very happy to say we have never lost a document."

When it comes to volume of correspondence and teletypes, however, the unclassified records section, supervised by Mrs. Florence Farley, is undisputed champion. The amounts of material actually received, dispatched and routed by this yeoman section, says Mrs. McAndrew, "no one dare even venture a guess." Here, too, the 80 to 90 telephone calls a day seeking information of one kind or another are routed.

"But, besides all of this," relates the M&R Group Leader, "here the master card of authorities has its origin; the TN-AL Manuals—the AEC directives—and guard station orders receive distribution; copies of all types of material are reproduced; master card files on all foreign and American visitors are maintained and a multitude of other sins performed."

To contact the force that galvanizes this sprawling operation into action, it is necessary only to dial M&R's telephone number. Likely, an all-business voice will answer "Pat," and your problem is on its way to solution.

Renowned for her memory of both obscure and important letters, events and dates, Mrs. McAndrew serves in both a self-appointed and officially approved role as guardian of the Laboratory's policies. "No correspondence goes out of this Laboratory through our office without my seeing it," she says in all

seriousness. "If you don't believe that, you come watch." There are few, if any, unbelievers among the Lab's secretaries and many higher-ups who have been called on the McAndrew carpet at various times. The infraction may have been a misspelled word or a violation of security, classification, laboratory policy, procurement, personnel or business office procedures.

Mrs. McAndrew came to Los Alamos in March of 1945 as a WAC private and quickly assumed responsibility for an area of fiscal matters—the PX, housing, travel, finance, crypto control and commissaries—for the Manhattan District. Mustered out of the WACs at Fort Sam Houston, Texas, on August 16, 1946, she flew back to Los Alamos the next day and reassumed duties as head of the Manhattan District's M&R section. When in the fall of 1946, Laboratory Director Norris E. Bradbury asked for someone from the section to set up a Lab M&R operation, she accepted the assignment. She became group leader on June 1, 1949.

Over the years, additional responsibilities have been added to her group, so many that a description of them requires 15 single-spaced typewritten pages. The group now has six sections and has had ample experience operating in far-flung regions of the world, sometimes under primitive conditions. There too, however, delivery and dispatch of mail was just one of many jobs, a fact of life that has prompted Mrs. McAndrew, with her usual clarity, to comment: "We are misnamed."



# By 'Tram' To Sandia Summit

*New Aerial Route Up West Face of Mountain  
Provides Spectacular Access to Recreation Area*

By PETER MYGATT

Photos by Bill Jack Rodgers

The first recorded climb of Sandia Crest which towers over Albuquerque and the Rio Grande was made in 1853 by a Swiss geologist named Jules Marcou.

And now the Swiss have done it again.

Two Swiss engineers have just finished ramrodding the construction of a Swiss-made aerial tram linking the northeast Albuquerque city limits, at an elevation of 6,559 feet, with 10,378-foot Sandia Crest, a vertical rise of 3,819 feet.

Many LASL travelers flying Carco to and from Albuquerque look at Sandia with a certain amount of awe, and a few of them have become aerial "sidewalk" engineers as they have kept up on the progress of the Albuquerque-Sandia Crest tramway.

The gondola-type tram, having a total length of 2.7 miles with an

average slope of 27.5 degrees, scales the spectacular Precambrian granite western face of Sandia Mountain. One span, from tower No. 2 to the Crest, is 7,750 feet long. It is the longest cable span in North America and the third longest in the world, exceeded only by the ones at Chamonix, France, and Caracas, Venezuela.

A network of 1½-inch cables supports two, 10 by 22-foot, 60-passenger coaches which travel at an average speed of 17 miles an hour, and an average travel time from terminal to terminal of 10 to 15 minutes. The gondolas operate on a "jigback" system; as one approaches the peak, the other is approaching the lower terminal.

Along the way, passengers look down 600 to 800 feet upon jagged spires and the rugged Juan Tabo

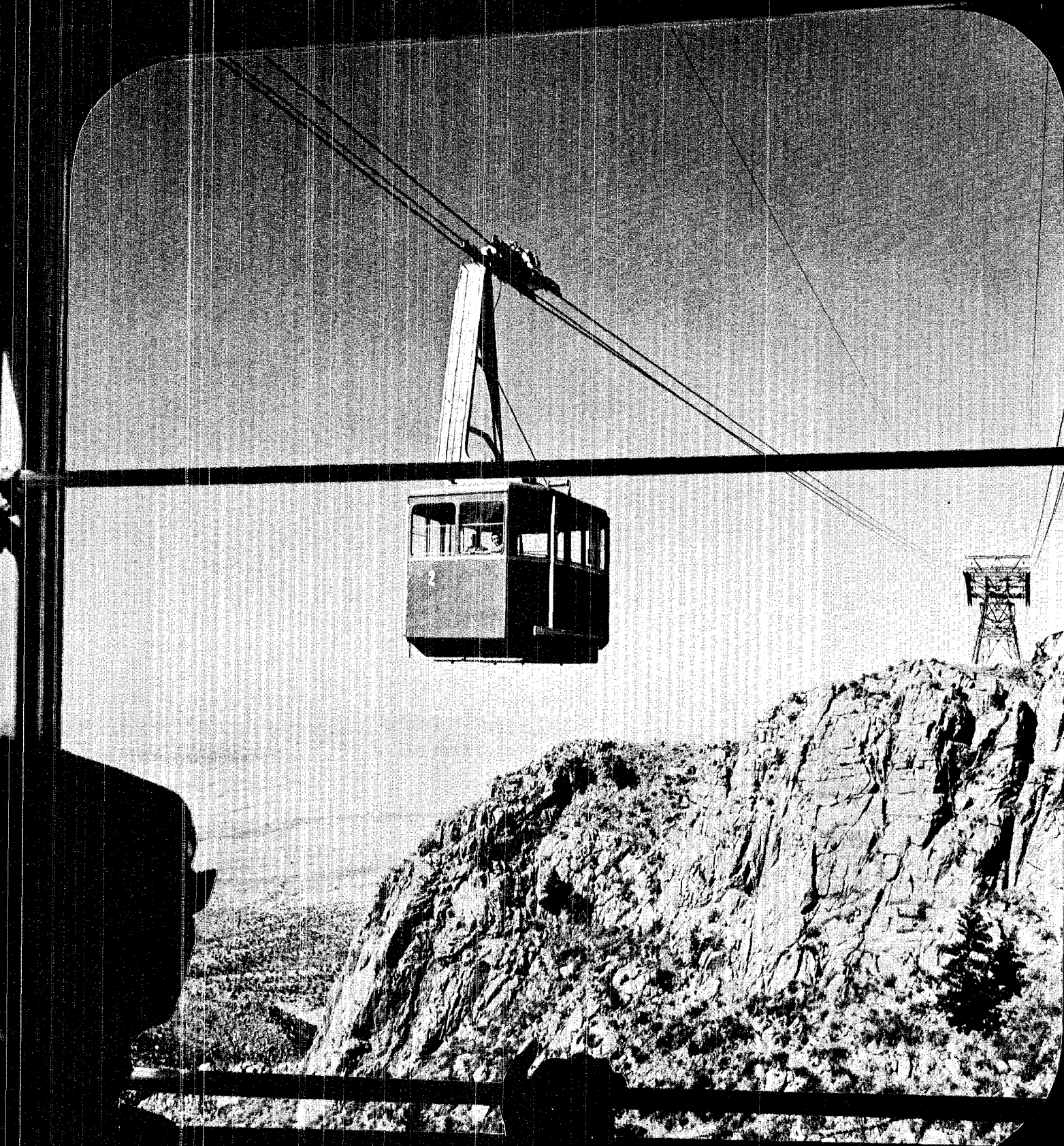
area which can be seen to the north of tower No. 2 on a ridge leading to Sandia Crest.

The four-story base terminal houses the tram machinery, including the 850-horsepower motor, a gift shop and a snack bar. The upper terminal, which is partly cantilevered over the face of the cliff so the coaches may dock much as a ferry does in a slip, is adjacent to the Summit House restaurant and lounge.

The Summit House, open year around, is being remodeled and ex-

*continued on page 12*

**Opposite:** Like streetcars in the sky, Sandia tramway gondolas glide silently past each other. The Rio Grande River Valley lies thousands of feet below.



## Tramway . . .

continued from page 10

panded to provide a quality evening cuisine. During the daytime the 360-degree panoramic view from the Summit House encompasses an area of 11,000 square miles. At night Albuquerque sparkles below like a jewel in the Rio Grande valley.

Just east of the summit is the Sandia Peak ski area with eight well-groomed trails for novices, intermediate, and expert skiers; and four lifts, including a year-around, 7,500-foot double chairlift which terminates at the Summit House.

Not only does the tram lead to the ski area, but it also serves a major recreation region which includes a wild game refuge, hiking and horseback trails, mountain climbing areas, and campgrounds.

Due for completion this summer is a 40-acre campground being developed by Sandia Peak Tram Co., franchised from Kampgrounds of America, which will accommodate 75 trailers and camping families. The campgrounds, one and a half miles northwest of the lower tram terminal, includes picnic tables, fireplaces, sanitary facilities, store, and meeting places. There is a riding stable at the base of the summit, and the tram company plans to construct a motel near the lower terminal under franchise from Treadway Inns Corp.

The Sandia Mountains are laced with trails. It is possible to hike from the base to the summit along the gentle La Luz trail which starts at the Juan Tabo recreation area north of the lower tram terminal. An older 4.4-mile trail starts just south of the recreation area at a wooden marker, and the remains of the old La Luz (Spanish, the light) Mine are found at 10,000 feet elevation near the old trail. Alpinists wishing to scale the west side of Sandia (Spanish, watermelon) generally try their skill on the Knife Edge, the Shield, the Prow, and the Needle. The Shield is the towering rock face overlooking the Juan



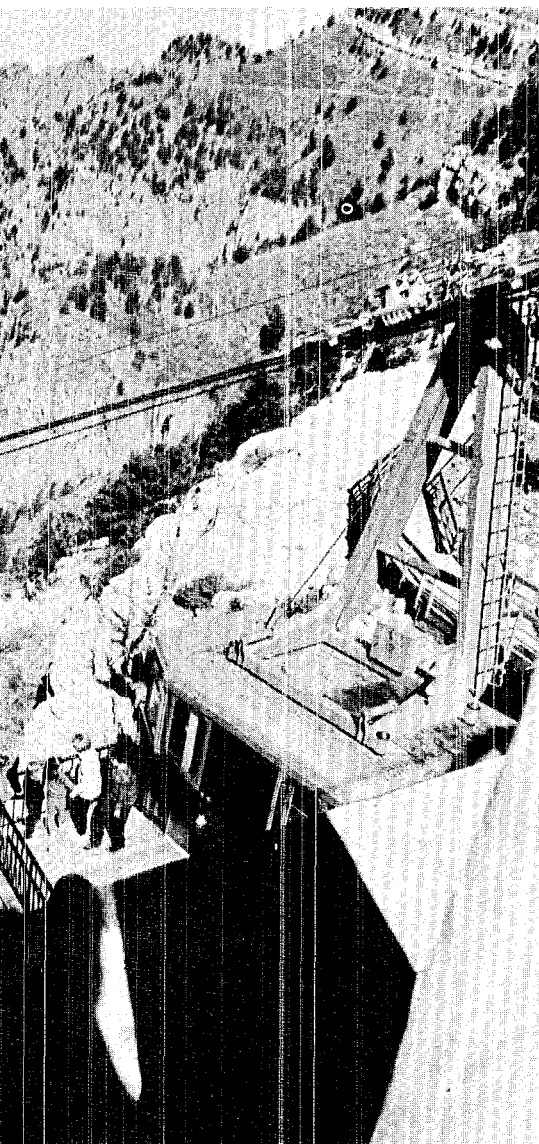
Tabo area of Albuquerque.

Sandia Peak at 10,447 feet can be reached by a 1.7-mile ridge trail leading north from the Summit House. The ridge trail also runs south five miles to South Sandia Peak and eight miles farther to Carlito Springs near U.S. Highway 66 (Interstate 40) in Tijeras Canyon. An all-weather road can also be used to reach the top of Sandia as well as the base of the ski area. To reach the ski area and crest by vehicle from Albuquerque, one travels east on U.S. 66 to State Road 10, then north to the intersection with State Road 44, then westward for a total of 22 miles to

the base of the ski area, and then on to the crest.

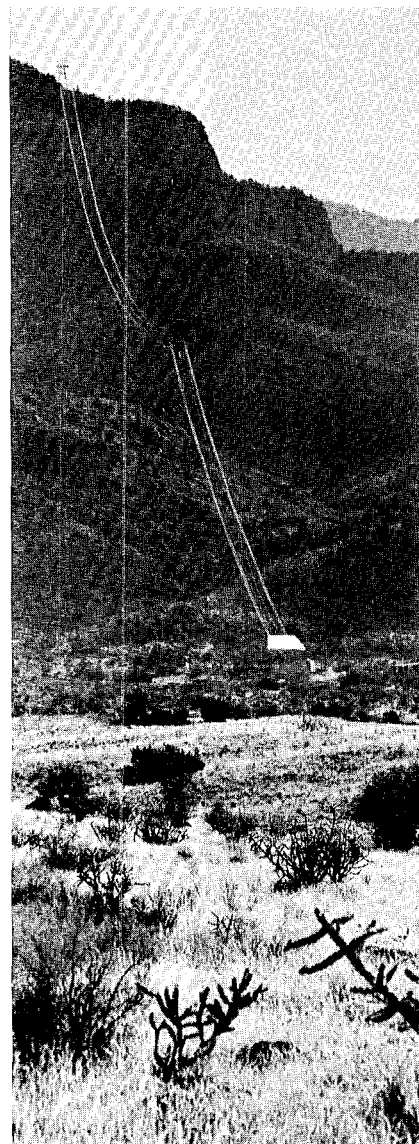
The entire Sandia recreation complex, being developed under the guidance of Albuquerque attorney Robert Nordhaus, company president, and Ben Abruzzo, vice president, is within Cibola National Forest. From the tram it is possible on occasion to see well-camouflaged Rocky Mountain bighorn sheep and mule deer. Deer also are seen from the chairlift. Other animals within the area include black bear, grey and red fox, mountain lions, coyotes, bobcats, squirrels, and numerous birds, to name but a few.

Life zones spanned by the new



Left: The third longest single cable span in the world, seen from the upper terminal of the tramway, seems to vanish into the rugged cliffs and canyons of Sandia Mountain. Cable extends to tower that is barely visible near left edge on most distant ridge.

Right: Like silver threads in the sunlight, tramway cables reach gracefully up side of Sandia Mountain from terminal in northeast Albuquerque.



tramway are: Upper Sonoran, 5,000 to 7,000 feet in elevation, which includes pinon, juniper, and live oak in the foothills and on the mesas; Transition, 7,000 to 8,000 feet, identified by ponderosa pine, gambel oak, and box elder; Canadian, 8,000 to 9,000 feet, where white fir, Rocky Mountain maple, and aspen grow; and Hudsonian, 9,000 to 11,000 feet, which is characterized by Douglas fir, engelmann spruce, limber pine, and Alpine fir. At sea level one would have to travel from the edge of the tropics far into Canada or Alaska to see all the zones spanned by a 10-minute ride on the tram.

Construction of the aerial tramway, manufactured in its entirety in Switzerland, was overseen by Adolph Zurbucken and Walter Lang, Bell Engineering Co. project engineers from Lucerne, Switzerland. A third man, Horst Thomas, electrical engineer from the Swiss-Italian firm of Brown-Boveri & Co., Baden, Switzerland, arrived in Albuquerque during January to watch over electrical installations of the tram.

Contractor for the \$1.7-million job was Martin-Luther General Contractors, Albuquerque. Universal Constructors, also of Albuquerque, was sub-contractor for

all concrete work and the roadways.

Universal, who built the two towers and both terminals, used special trucks and a helicopter for the concrete hauling job, and for the transportation of materials, workers, and supplies because of the mountain goat footing that was necessary. A special supercharged Bell helicopter made 550 round trips during the building of the 65-foot-high tower No. 2 at an elevation of 8,750 feet. Premixed concrete in 100-pound sacks was hauled up dry along with 55-gallon drums of water and was mixed on the spot. The helicopter was able to haul

continued on next page

## Tramway . . .

continued from preceding page

700 pounds plus crew each flight. Tower No. 1, overlooking the base terminal, is 232 feet tall and sits at an elevation of 7,010 feet.

Thirty-foot tensile-steel bars, embedded in the granite and held in place with pressure-grouted concrete, anchor the towers and upper terminal to the cliffs. Additional stability comes from 10-foot and 20-foot pits filled with concrete that form foundation levels for the structural steel. Some 550 yards of concrete was used at the upper terminal, 50 yards at each of the towers, and 900 yards at the lower terminal. Total weight of the concrete on the job was 5,280,000 pounds.

There is a 70-foot concrete-lined shaft at the lower terminal to hold counterweights that are used to keep uniform tension on the cable network. Each of the four counterweights weighs 90 tons, and is used to offset variations in cable tension caused by temperature changes, wind, other weather factors, and by variations in the payload of each coach. Two counterweights inside 20-foot pits at the upper terminal are used as anchors for the lift.

Each coach is supported by two  $1\frac{5}{8}$ -inch cables, weighing 46 tons apiece. The hauling cables are  $1\frac{1}{4}$  inches in diameter, and each weighs 40 tons. Drive machinery at the lower terminal is operated by the 850-horsepower electric motor. A smaller 200-horsepower gasoline engine is on standby in the event of a power failure, and would operate the coaches at a somewhat slower speed. A separate 40-horsepower gasoline engine operates a small, 10-passenger auxiliary coach which can ride either set of support cables, but whose drive power comes from a third continuous-loop auxiliary cable serving both support systems. In an emergency the auxiliary coach can act as a 'lifeboat,' taking passengers off either end of the two passenger gondolas.



Above: Adolph Zurbucken of Lucerne, was one of two Swiss engineers who superintended tramway construction. Gondolas were manufactured in Switzerland.

Below: Gondola docked at upper terminal, elevation 10,378 feet. Platform is cantilevered over face of cliff. Tramway passes through five climatic zones.



# When the Sky Fell

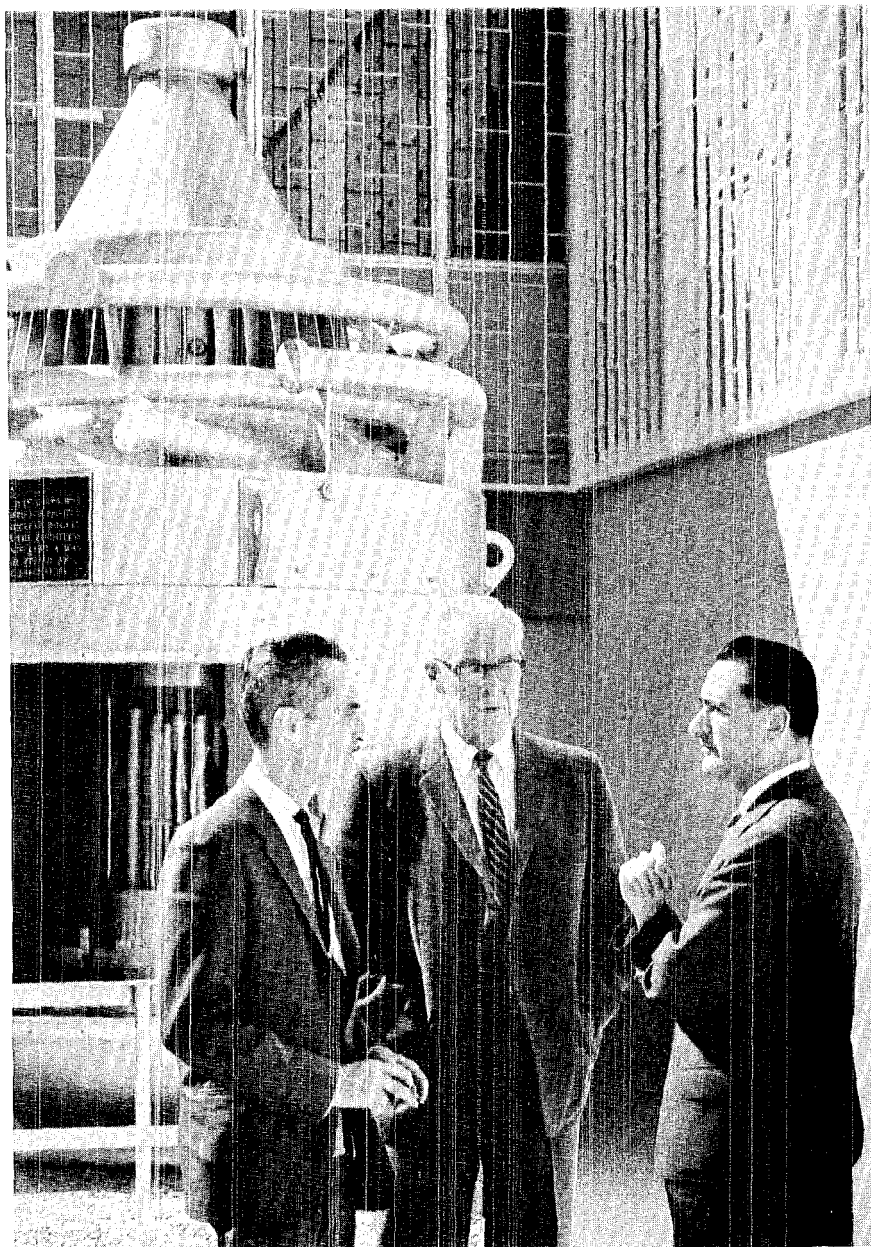
By **BARBARA STORMS**

From the doorway of his white-washed house on the east edge of the village of Palomares on the southern coast of Spain an old man surveyed his tomato fields awaiting harvest. Suddenly, in those very fields, just 75 yards away, there was an explosion that sent the old man reeling back into his house and knocking him to the floor. A window shattered.

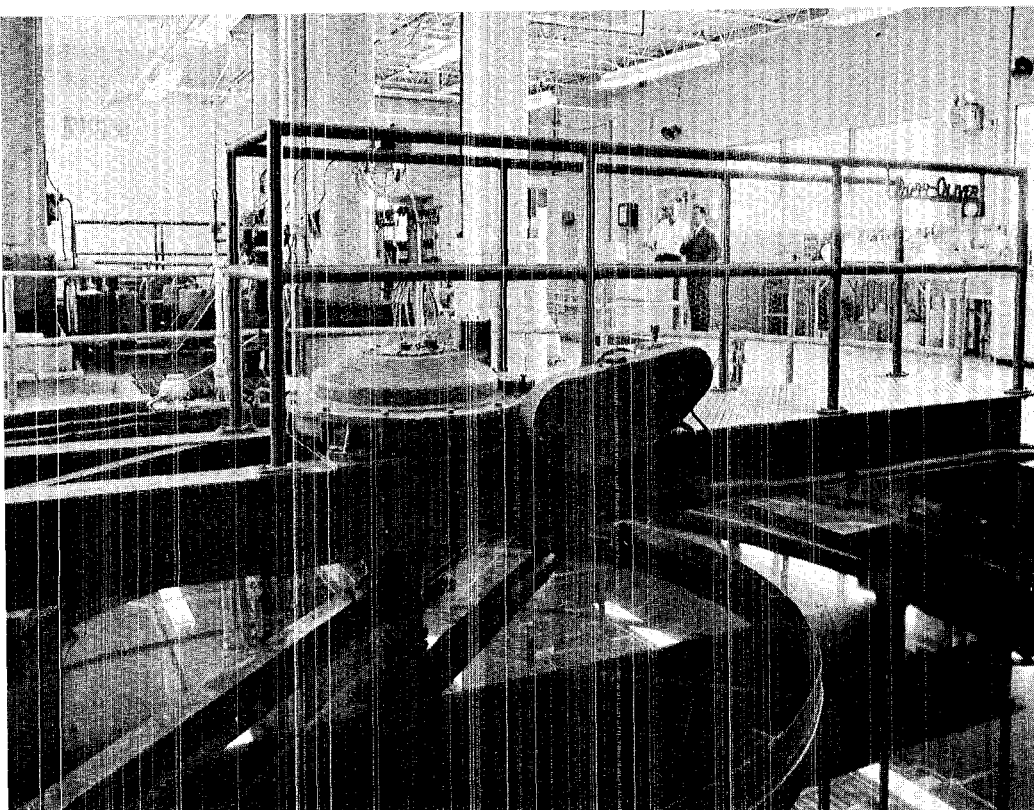
At the same time, just west of the village, a rocky hillside felt the impact of a similar explosion. Across the intervening area huge chunks of metal and pieces of equipment fell to earth.

It was January 17, 1966. A KC-135 tanker and a loaded B-52 bomber of the United States' Sixteenth Air Force had exploded in mid-air during a refueling operation, scattering debris over foreign soil. But it would be days before the villagers, or even the U.S. military authorities, would realize the full

*continued on next page*



Dr. Emilio Iranzo (right) of Spain discusses radiobiology with Health Division's Wright Langham (left) and Thomas Shipman during visit to LASL.



Almost lost in maze of pipes, valves and flocculators, H-7 Group Leader Chris Christiansen tells Iranzo about contaminated liquid waste treatment.

## *Iranzo . . .*

continued from page 15

impact of what had really happened: That two hydrogen bombs had fallen undamaged, one on land and one in the Mediterranean, but the chemical explosive components of two others had dropped on land and exploded on impact, scattering plutonium and uranium over the countryside.

The sky fell on Palomares that day and the quiet little farming community would never be quite the same again.

But much of the credit for bringing it back to near normal goes to Dr. Emilio Iranzo, a staff member of the Division of Health and Protection of Spain's Junta de Energia Nuclear, who visited Los Alamos last month.

Dr. Iranzo and his boss, Dr. Eduardo Ramos, were the first Spanish nuclear energy officials to reach the bewildered villagers three days after the disaster.

"I'll never forget that day," Dr. Iranzo recalled. "I was working around the laboratory (in Madrid) at about 5:30 when Dr. Ramos called to say we would have to catch

a plane at 6:30. We didn't know what had happened, only that we had to get there right away."

The Spanish health physicists immediately began taking urine samples and using counters to monitor some 1800 villagers and visiting sightseers, their clothing and their homes, looking for signs of serious contamination. What they found instead was fear.

"It was not surprising," Dr. Iranzo said. "In a place where nothing happens, something had suddenly happened." Already there were dozens of worried looking American officials swarming around the place, men in weird clothing poking around with strange instruments, newsmen were converging from all over, the villagers were not allowed in their fields. There was no question in the minds of the villagers that something was wrong and they were afraid.

They soon felt their fears justified. Radios throughout the village were reporting the atom bombs and talking about radioactivity. "The people knew about atom bombs because they had heard about Hiroshima and Nagasaki," Dr. Iranzo said, "They didn't understand any-

thing about "radioactividad" but they knew the word and to them it was the worst thing in the world."

Shortly after the arrival of Wright Langham, LASL's plutonium expert, it was established that the health hazard was minimal. The only real hazard was the widespread fear. And so, while American decontamination crews took over the clean-up job, it became Dr. Iranzo's responsibility to eliminate the doubts and suspicions of the people.

"It was very difficult to convince them that this was not the same as Hiroshima," he said. "Most of them thought they were going to die; many of them wanted to leave right away."

Dr. Iranzo went to their homes, explained to them, ate their tomatoes and, it seemed to him, subsisted almost entirely on fish to prove it harmless. But they were still suspicious. "You can eat it if you want to, but . . ." they indicated.

"I tried to explain to them that I love to live, I don't want to die," Dr. Iranzo said, "I wouldn't eat it if it were dangerous."

Fortunately, he said, the Spanish people have a great deal of respect for the confidence in their government officials. They began to realize that they weren't sick, they felt fine, and nothing appeared to be wrong. They saw contaminated top soil dug up and taken away and the rest of their fields plowed under and gradually the fear subsided. In the end, only a couple of families moved away and the rest have returned to their fields.

But another worry has beset both the villagers and the government:

the effect of the accident on the economy.

The economy of Palomares and vicinity depends on crops of tomatoes, beans, alfalfa, oranges and lemons, on the sale of pigs and cattle and fish caught off the Mediterranean coast. As a precautionary measure, the U.S. government bought, then harvested and burned all crops in the contaminated area. But even so, Spanish wholesalers at first were refusing to buy tomatoes anywhere in the Palomares region, no matter how far from potential contamination. The sale of milk, fish and other produce from the area felt the spread of rumors of contamination.

There was also the problem of the tourist business. The Spanish government has been planning development of the magnificent sweep of beach at Palomares as a Spanish Riviera tourist attraction. Despite the fact that the water suffered no contamination whatever, the question remained: would the tourists want to come, especially if the fourth weapon, which chuted out to sea, was not found? It was.

Over the months the fears have begun to subside and Palomares life is returning to normal.

Although some economic problems may remain, Dr. Iranzo marvels at the amount of good luck that kept the accident from creating "a terrible mess." Not a single person or animal was killed or injured by falling debris. Except for a broken window, no buildings were damaged. The largest portion of the B-52 fuselage fell in the center of a triangular area formed by a school, occupied by 80 children, and two houses, none of them more than 60 yards apart.

"God must have had his hand out," Dr. Iranzo said.

Dr. Iranzo came to the United States last month to complete the final phase of his mission. He was the official Spanish witness to the arrival of contaminated soil in this country and its burial in the Savannah River waste disposal site near Aiken, South Carolina. He then

accepted an AEC invitation to visit Los Alamos and see the health research and industrial health activities here.

"I certainly know a lot more now than I did at the beginning," Dr. Iranzo said, summing up the harrowing activity of the past three months. "Dr. Langham was a great help to us. We have much trust in Dr. Langham and what he tells us about plutonium."

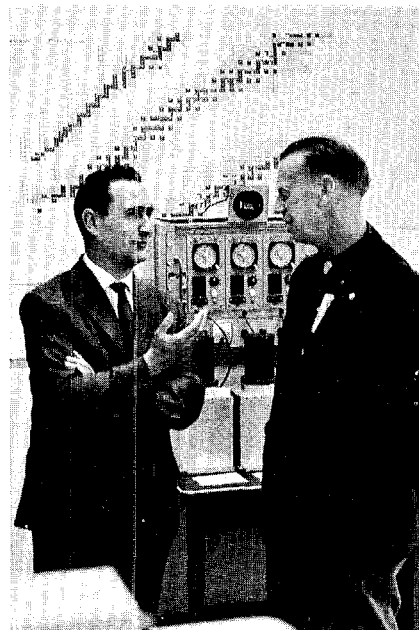
The Spanish official said people had varying feelings about the accidents. "Many people feel that it is something that should never happen. To me, it is something that could have happened anywhere."

The scientist, who earned his Ph.D. at the University of Madrid, studied at the University of Rochester in New York and worked for a time at Brookhaven National Laboratory. He found New Mexico quite a change from the northeastern United States with which he was familiar. The countryside is similar to that around the Palomares area; so similar, he said, that the country is being used as the location for many U.S. Western movies. Finding so many Spanish people here, he said, made him feel "very proud, as though we might be related in some way."

While Dr. Iranzo worked to restore calm among the Palomares villagers following the bomb disaster, a special team of military and civilian experts flew in from the United States to decontaminate the area. Working between the two, as technical advisor on plutonium hazards, was LASL's Wright H. Langham, Assistant H Division Leader for biomedical research.

continued on next page

Latest radiation counting techniques were reviewed for visitor by Phil Dean of H-4 during visit to HRL Building.



At new Occupational Health Laboratory Dr. Iranzo learned about LASL developments in industrial hygiene from H-5 Group Leader Harry Schulte.



## Iranzo . . .

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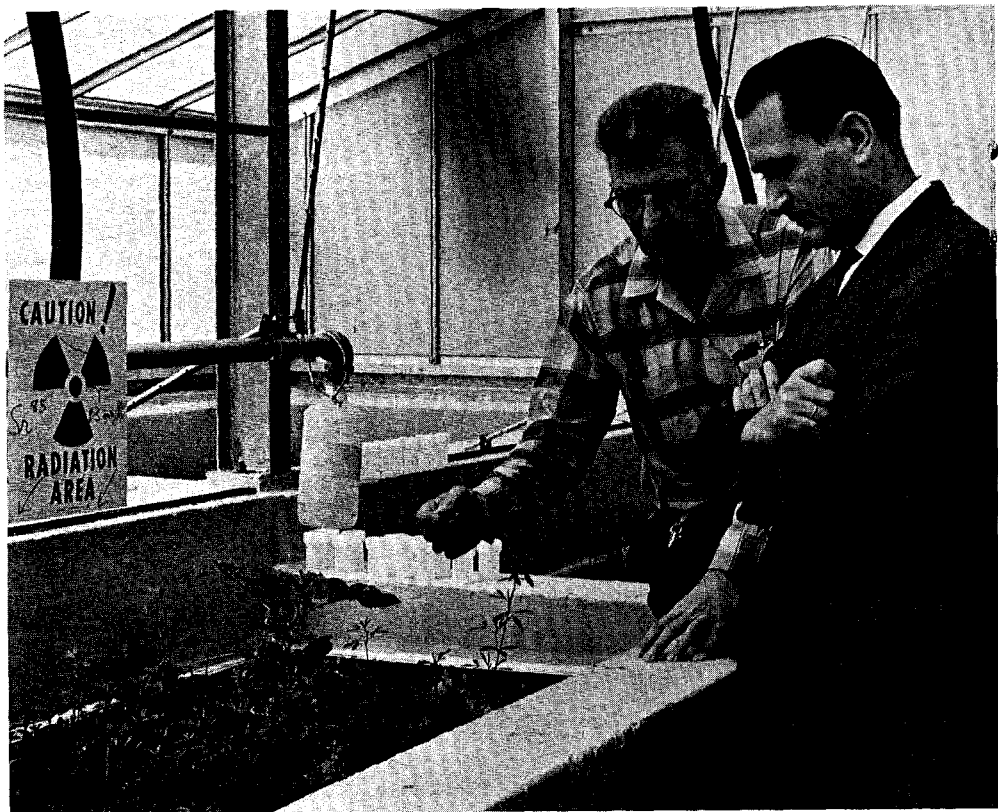
Unquestionably one of the foremost authorities on plutonium in the world, Langham was snatched from a meeting in Washington and flown to Spain to size up the situation as soon as the accident was reported. Accompanying him were two other LASL men, decontamination experts Dean Meyer and Jim Lawrence of H-1. (On-the-scene expert advice was provided in other fields by LASL's Doug Evans of GMX and Bill Chambers of W Division.)

What Langham found was precisely what he had predicted on the basis of more than 20 years of research on the problem of plutonium contamination.

First: Rather startlingly high contamination counts reported from early urinalyses were old stuff to Langham who had had the same problem with the first urine samples monitored back in 1944. Unless taken under carefully controlled hospital conditions, urine samples will become contaminated from the outside by particles brushed off hands or clothing into the bottles. New samples taken under ideal conditions showed no significant exposure.

Second: Tests in Nevada some years ago simulating the same sort of accident indicated that only the people directly downwind from the explosion over whom the contaminated cloud passed could receive any serious amount of exposure. Thanks to fortunate wind conditions and the fact that few people were in the fields that day, exposure was minimal.

From the two impact points, one a mile and a quarter west of Palomares and the other on the eastern edge of the community, the wind blew the contaminated clouds toward the northeast, bracketing the village but not quite reaching it. Contamination was found over a 640-acre area with the level ranging from zero up to expected levels in the impact areas themselves.



Of interest to Iranzo was the Laboratory's continuing study of crops grown in contaminated soil, here explained by Eric Fowler in the greenhouse at TA-50.

Around the impact areas where contamination was greater, some  $5\frac{1}{2}$  acres were wetted down with 125,000 gallons of water a day while men in protective clothing scraped up top soil to a depth of two or three inches. Some 1600 tons of soil were sealed in 4,789 55-gallon steel drums and shipped by freighter to Charleston, South Carolina, and by rail to the AEC's burial ground at Savannah River. In the remaining portion of the contaminated area, crops were harvested and destroyed and the ground plowed to a depth of ten inches.

In addition to his duties as expert advisor to the decontamination crews, Langham was assigned as a special attache to the American embassy to work in liaison with the Spanish AEC on technical problems. They could not have asked for more knowledgeable help.

Langham has been deeply concerned with the health hazards of

plutonium since the first microscopic amounts of it arrived at Los Alamos in the spring of 1944. Originally a plutonium chemist, he was one of four who began a research program aimed at developing tests for determining exposure of laboratory personnel and a few months later supervised development of the first successful method for analyzing urine for plutonium.

Langham has been responsible for extensive research on the metabolism, in animals and man, of radioactive materials, using himself as a guinea pig in ingestion and absorption studies, and has become a recognized authority on worldwide fallout from nuclear explosions. H-4, of which he is group leader, has pioneered in the development of scintillation counters for biological studies and recently developed an improved proportional counter capable of measuring plutonium in the lungs.

# Two Lawrence Winners

For the second time in four years, the Los Alamos Scientific Laboratory has double winners among recipients of the Ernest Orlando Lawrence Memorial Award, an annual honor which was presented by the AEC last month to five U.S. scientists.

Harold M. Agnew, leader of the Laboratory's Weapons Division, and Ernest C. Anderson, member of the biophysics staff in H-4, are the Los Alamos winners.

They received the award, given each year since 1960 for recent meritorious contributions in the field of atomic energy, at a ceremony April 27 in Washington, D.C. The occasion was marked by presentation of a medal, a citation and \$5,000 to each of the honorees.

The award honors Dr. Ernest O. Lawrence, inventor of the cyclotron and director at one time of the radiation laboratory at the University of California, Berkeley and Livermore, which bears his name. Four other LASL staff members have won the award, two of them in the same year, 1963.

The citations of the 1966 LASL recipients read:

Dr. Agnew—For his highly significant contributions to the development of nuclear weapons and for his outstanding success in working with the armed services to assure the maximum safety and effectiveness of atomic weapons systems.

Dr. Anderson—For outstanding contributions to nuclear medicine,

to biological research, to archeological dating, and for the development of liquid scintillation counting which made possible neutrino experiments and the liquid scintillator whole body counter.

Agnew has been intimately involved in the nuclear weapons program since its inception, first at the Metallurgical Laboratory of the Manhattan District and subsequently at Los Alamos. Apart from the period devoted to earning his doctorate, following World War II, and the period of 1961-64 spent in Europe as scientific advisor to the Supreme Allied Commander, SHAF, his work has been at LASL.

Agnew flew on the strike mission of the first atomic bomb drop to Hiroshima, has been technical consultant to the Joint Congressional Committee on Atomic Energy, and is currently chairman of the Army Scientific Advisory Panel. He is a member of the American Physical Society.

He is married, has two children and resides at 1459 46th Street, Los Alamos. He was born in Denver, received his A.B. degree from the University of Denver in 1942, his M.S. in 1948 and his Ph.D. in physics in 1949, both from the University of Chicago.

Over a period of 23 years of service to the U.S. atomic energy program, Anderson has made many highly significant contributions in several fields including natural

radiocarbon liquid scintillation counters, low-level radioactivity measurements and cellular biochemistry.

He was a Rask-Orsted Fellow at the University of Copenhagen in 1951-52 and is a fellow of the American Association for the Advancement of Science. He received his A.B. degree from Augustana College, Rock Island, Illinois, in 1942 and his Ph.D. in chemistry from the University of Chicago in 1949. He was assistant analytical chemist at the Metallurgical Laboratory from 1942 to 1944. He has been at Los Alamos since 1944 and has been a member of the biophysics staff since 1949.

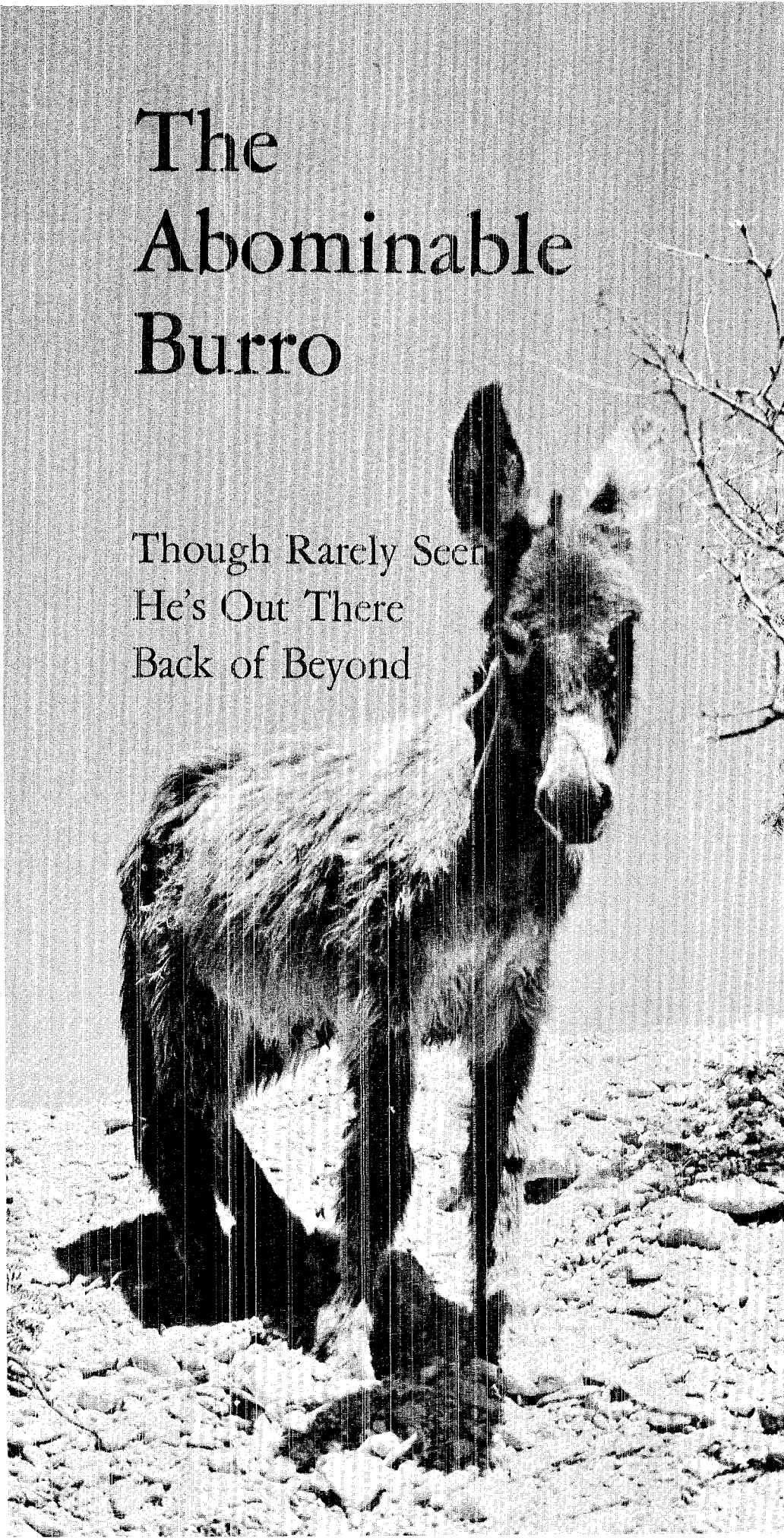
Anderson is married and has three children and lives at 1610 Sage Loop, Los Alamos.

The previous LASL award winners are Conrad Longmire, Alternate T Division Leader, 1961; James Taub, CMB-6 Group Leader, and Louis Rosen, MP Division Leader, 1963; and George Cowan, J-11 Group Leader, 1965.

Other 1966 winners of the Lawrence Award are Murray Gell-Mann, professor of physics at the California Institute of Technology, Pasadena; John R. Huizenga, senior scientist at the Argonne National Laboratory, Argonne, Ill.; and Paul R. Vanstrum, member of technical management staff at the Oak Ridge Gaseous Diffusion Plant, Union Carbide Corporation, Oak Ridge, Tenn.

# The Abominable Burro

Though Rarely Seen  
He's Out There  
Back of Beyond



By JOHN YOUNG

Even a glimpse of a wild burro is such a rarity for most people in the Southwest today, it is hard to believe that in some regions they have become a problem because of their rapidly growing numbers.

In the back country of Bandelier National Monument, although they are rarely seen, a hundred or more burros are worrying game officials. In the region of Death Valley National Monument, they are a major headache.

A burro is a donkey, a Spanish donkey if you like, a direct descendant of the wild ass of the North African deserts and of Biblical fame. The race of Nubian asses is nearly extinct in Africa now, but having been brought to Spain in the Eighth Century by the invading Moors, it still prospers there. There are a couple of other related species of asses in Asia, but only one exists in the Americas. It is a cousin of the zebra and the horse and crosses readily with the latter.

Never a native of these shores, the burro came to what is now the United States from Spain via Mexico, the favored beast of burden for the Spanish conquistadores, the priests, the settlers and finally the miners.

Among the hardiest and most adaptable of all four-legged beasts, the burro can live anywhere and on anything, is as sure-footed as a goat and can find water where a horse or mule would perish. The burro has only one natural enemy except man, and that is the cougar. In the West, where there are still vast uninhabited spaces with few men and hardly any cougars any more, the burro is very much at home. Thereby hangs the problem.

Early American miners quickly adopted the Mexican custom of using burros to carry their supplies and equipment on prospecting trips, and to carry out ore in difficult country. They were used also until fairly recent times for hauling

wood around old Spanish settlements like Santa Fe, where a burro almost hidden by a load of faggots was a common sight 20 years ago.

Abandoned when the mining booms played out, when roads and railways came in, and the pickup became the universal carrier, the burros took to the wilds. In the wild state they became very aggressive, and are exceedingly formidable foes with their teeth, hoofs and great agility. They will chase away from a favored water hole any other large animals—horses, cattle, goats, deer, bighorn sheep—they are all the same to a pack of burros.

Not only do they chase away the game, they strip the range bare, reducing the soil, as one game management official has said, to butter. They paw up the roots and leave a virtually sterile terrain. They are worse than sheep in this respect. It is one serious character flaw in their otherwise very well-balanced makeup—they do not have sense enough not to eat themselves out of house and home.

For a period in the 1920's and 1930's, when they were unprotected and before the big national parks and monuments had closed some of their habitat to hunting, their numbers were reduced by so-called sportsmen, irate ranchers, or by commercial dog-meat hunters. A few were captured for pets, and for a brief time the Government tried turning them over to mail order houses for this purpose. A large herd in the Abiquiu area, where a peak is named for them, held out in the Jemez mountains until the late 1920's. Ranchers killed them all off because of their destructive range habits and fondness for running off the horses. The product of mating burros and horses is mules, and who wants mules?

Aroused public opinion finally stopped indiscriminate slaughtering of the burros in most areas, and a refuge was established for them in California—in the region between Bakersfield and Death Valley—in 1957. Remnants of the once great herd in Death Valley became

established in the refuge. Now they have multiplied to an estimated 3,000 head outside the Monument, have virtually taken over the Panamint Range and Panamint Valley west of Death Valley, and have nearly driven the bighorns out.

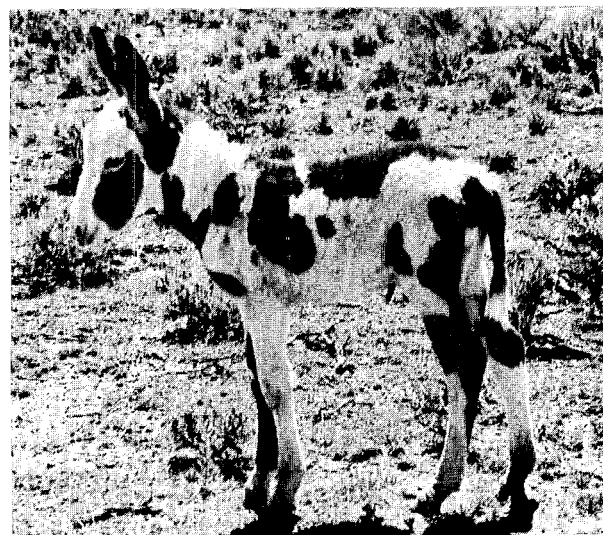
Most other big parks and monuments have their herds, also, and officials do not know what to do with them. There are an estimated 100 on the South Rim of the Grand Canyon (where they once numbered more than 2000), a somewhat larger herd in Organ Pipe Cactus National Monument, and an unknown number in Big Bend National Park. They are also fairly common in Monument Valley, along the shores of Lake Powell, and probably in many other areas where they have not yet become a problem to anyone.

In parks and monuments, as well as in their own refuge, they cannot be hunted legally. They are very hard to trap, and if they are caught, nobody wants them. The dilemma has park, forest, game and range management people in a dither.

The professional game people almost to a man regard burros as a kind of vermin, to be hunted down ruthlessly—as have been the coyotes, the cougars and the eagle—on the grounds that they are not natives, only a feral species like domestic cats or pigs gone wild.

But burro admirers—whose numbers are legion—reply that burros have been on this continent as long as white men have and much longer than the ancestors of most of their human foes, and that if they are not natives, neither are the Barbary sheep, the ibex, the oryx, the kudu, the Chinese pheasants and Chukkar partridges and Kokanee salmon and a dozen other exotics now being carefully nurtured at the taxpayer's expense.

The trouble is, burros are not very good to eat, being much too tough and indiscriminate in their diet (they make goats look like gourmets by comparison), and they have no horns. A burro with a Boone & Crockett trophy spread



would be something else entirely.

Burros come in all colors, mostly dun gray and brown, and occasionally in a pinto phase. Pinto burros are still being bred in northern New Mexico for sale as pets, and can be seen now and then along the Ojo Caliente road and in the San Luis Valley above Taos. These are not really wild—only half wild—and usually can be induced to come close enough for a photo by an offer of bread. The really wild ones, born in the wild, are among the most elusive of wild animals, with an uncanny ability to spot an approaching human at a range of a mile by sight or hearing or both, simply vanishing into the brush when they do.

Nearly all burros show the characteristic cross mark on their backs, formed by a spinal ridge of stiff hair crossed at the shoulders by a dark stripe. According to ancient legend, this is the mark of the cross left when Mary rode a donkey to Bethlehem. Donkeys are still treated with respect and widely employed in Spain and old Mexico, and a few are used for wilderness pack trains in this country still, despite the advent of tote-goats and helicopters. But the rest of the species, quietly multiplying in the back of beyond, is regarded with anything but reverence by the people who worry about such things.

# the technical side

## **American Physical Society Meeting, Washington, D.C., April 25-28:**

"Absolute Oscillator Strengths for Members of the Principal Series of Cesium" by Lewis Agnew, N-5.

"Coulomb-Excitation of  $Au^{197}$  with Oxygen Ions" by E. M. Bernstein, John M. Palms, both P-DOR, and G. G. Seaman, P-12.

"Source of Polarized Negative Ions Using Charge Exchange in Cesium and Argon" by G. P. Lawrence and J. L. McKibben, both P-9.

"Total Reaction Cross Sections for 14.5 MeV Protons from 22 Separated Isotope Targets" by George Igo, M. L. Roush, and J. Dicello, all P-DOR.

"Critical Fields in Vanadium-Gallium" by D. L. Decker, Consultant-Brigham Young University, and Henry L. Laquer, CMF-9.

"Self-Switching Superconducting Solenoids" by K. J. Carroll, E. F. Hammel, and Henry L. Laquer, all CMF-9.

"( $t$ ,  $He^4$ ) Reaction on Even Ni Isotopes" by A. G. Blair and D. D. Armstrong, both P-12.

"( $He^4$ ,  $t$ ) Reaction on Medium-Mass Nuclei" by D. D. Armstrong, A. G. Blair, and H. C. Thomas, all P-12.

"( $He^3$ ,  $n$ ) Reactions on  $Fe^{58, 58}$  and  $Ni^{58}$  at 22 MeV" by E. R. Flynn, P-10.

"Compound Elastic Scattering in Neutron-Nucleus Interactions" by Jerome G. Beery, P-10, and Louis Rosen, MP-DO.

"Computer-Designed Proton Linac Cavities" by Harry C. Hoyt, T-5.

"Level Widths of Medium-Weight Nuclei in the Continuum" by Peter Fessenden, P-12, W. R. Gibbs, T-9, and R. B. Leachman, P-12.

"Bremsstrahlung from Low Energy Electron Collisions with Neutral Atoms" by R. C. Mjolsness and H. M. Ruppel, both T-12.

## **AEC Interagency Statistical Conference, Dow Chemical Co., Rocky Flats Division, Golden, Colorado, April 28-29:**

"A Likelihood Ratio Test for the Consistency of a Set of Count Rates" by Roger H. Moore, T-1.

"Elementary Bayesian Procedures" by R. K. Zeigler, T-1.

## **Departmental Seminar, Brookhaven National Laboratory, Long Island, N.Y., April 27:**

"Heavy Element Synthesis in Nuclear Explosions" by George A. Cowan, J-11 (Invited Paper)

## **Rio Grande Chapter, Health Physics Society, Santa Fe, N.M., April 2, and Lecture to Cadets at U.S. Air Force Academy, Colorado Springs, Colorado, April 8:**

"The Why and How of Controlled Thermonuclear Power Research" by J. A. Phillips, P-14.

## **Annual Meeting, American Geophysical Union, Washington, D.C., April 19-22:**

"Temporal Variations of Electron Fluxes in the Tail of the Magnetosphere at 17 Earth Radii" by J. P. Conner, S. Singer, and E. E. Stogsdill, all P-4.

"The Spatial Distribution of Energetic Electrons Near the Dawn Meridian at 17 Earth Radii" by S. Singer, J. P. Conner, and E. E. Stogsdill, all P-4.

"Distribution Functions of Solar Wind Ions" by A. J. Hundhausen, T-12, J. R. Asbridge, S. J. Bame, H. E. Gilbert, and I. B. Strong, all P-4.

"Correlations Between Measurements of Solar Wind Velocity and Temperature" by I. B. Strong, J. R. Asbridge, S. J. Bame, all P-4, H. H. Heckman (LRL), and A. J. Hundhausen, T-12.

"Vela Particle Measurements and Models of the Magnetosphere" by E. W. Hones, Jr., J. R. Asbridge, S. J. Bame, and I. B. Strong, all P-4.

"Characteristics of the Electrons in the Plasma Sheet of the Magnetospheric Tail" by S. J. Bame, J. R. Asbridge, H. E. Felthausen, E. W. Hones, Jr., and I. B. Strong, all P-4.

"Vela Measurements of the Photon Boundary of the Magnetosphere" by J. T. Gosling, J. R. Asbridge, S. J. Bame, and I. B. Strong, all P-4.

"Vela Observations of Solar Proton Events" by H. E. Felthausen, J. R. Asbridge, S. J. Bame, and J. T. Gosling, all P-4.

"Electrons in the Transition Region Between the Bow Shock and the Magnetosphere" by J. R. Asbridge, S. J. Bame, H. E. Felthausen, and I. B. Strong, all P-4.

## **Neutron Cross Section Technology Conference, Washington, D.C., March 22-24:**

"Critically Dependence on Neutron Cross Sections Above 100 KeV" by Gordon E. Hansen, N-2. (Invited Paper)

Rio Grande Chapter, Association for Computing Machinery, Cloudcroft, N.M., April 21-22:

"Minimum Chi-Square Estimation with Non-Linear Least Squares Procedures" by Roger H. Moore, T-1. (Invited Paper)

"Designing Optical Systems with a Computer" by Charles A. Lehman, Sr., T-5. (Invited Paper)

Symposium on Recent Advances in Cosmic Ray Research, Huntington Beach, California, April 4:

"Research Activities of the AEC Aircraft" by R. W. Peterson, J-16, and D. Liebenberg, CMF-9.

American Mathematical Society Meeting, New York City, April 4-7:

"Analytical Continuation of Laplace Transforms by Means of Asymptotic Series" by W. A. Beyar, T-8, and Leon Heller, T-9.

Colloquium, Physics Department, McGill University, Montreal, Canada, April 11:

"A Progress Report on a Study of the Mass-4 Nuclear System with the Los Alamos Tandem Van de Graaff Facility" by Ross W. Newsome, Jr., P-12.

Fourth Quantum Electronics Conference, Phoenix, Arizona, April 12-14:

"Investigation of Stimulated Emission in Multiply Ionized Plasmas Produced by the Scylla I Theta Pinch Machine" by Phillip N. Maco, J-8.

Presentation at Department of Biophysics, University of Colorado Medical Center, Denver, Colorado, March 28:

"Some Thoughts on Electron Microscopy and Results Applied to Collagen" by John H. Manley, DIR OFF.

Presentation at Physics Department, University of Oregon, Eugene, Oregon, March 31:

"Some Reactions Induced by He<sup>3</sup> Particles, He<sup>4</sup> Particles, and Tritons in the Medium-Mass Region" by Allen G. Blair, P-12.

*Penneman at Ceremony . . .*

## Historic Pu Preserved

Bob Penneman, alternate group leader of CMF-4 and a pioneer researcher in the properties of plutonium, was present on March 28 when a small disk of platinum coated with an invisible layer of plutonium 239 was presented to the Smithsonian Institution in Washington, D.C.

The presentation came 25 years to the day after the tiny sample was used to illustrate that Pu 239 was fissionable, a discovery that changed the course of history.

Previously, the only known isotope that was fissionable with thermal neutrons was the scarce isotope uranium 235. Pu 239, however, could be made by bombardment of the abundant isotope of uranium -238.

The 1941 discovery at the University of California opened the door wide enough for man to enter the age of nuclear energy.

Two of the original experimenters at Berkeley—AEC Chairman

Glenn Seaborg, who is one of the discoverers of plutonium, and Dr. Emilio Segre, now a Professor of Physics at the University, made the presentation to the Smithsonian.

The disk containing the plutonium 239 had been long-forgotten, stored in a vault at Berkeley and was nearly thrown out when it was re-discovered recently in a cigar box.

Penneman began working with plutonium in 1942 when he joined the secret wartime Manhattan Project in Chicago. "I remember distinctly when a tiny amount of Pu 239, about 10<sup>-9</sup> grams, was issued to me for some radiation effects work," Penneman recalls. "Today, there are thousands of grams of the isotope."

Penneman was in Washington to attend a meeting of the Transplutonium Program Committee of the AEC's Division of Research. He was invited to the Smithsonian ceremony by Dr. Seaborg.

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Graduate Seminar, New Mexico Institute of Mining and Technology, Socorro, N.M., March 31:

"Computational Experiments in Fluid Dynamics" by Thomas D. Butler, T-3.

Presentation at Physics Department, University of New Mexico, Albuquerque, N.M., April 1:

"Proton-Proton Spin Correlation" by Nelson Jarmie, P-DOR.

Nuclear Engineering Seminars, Argonne National Laboratory, Chicago, Illinois, April 12; Brookhaven National Laboratory, Long Island, N.Y., April 19, and Oak Ridge National Laboratory, Oak Ridge, Tenn., April 26:

"Rover Design and Engineering" by R. E. Schreiber, DIR OFF.

Panel Discussion "Survey of Problems Affecting New Mexico Libraries," Joint Meeting of the New Mexico Library Association and Rio Grande Chapter, Special Libraries Association, Carlsbad, New Mexico, April 1:

"Locating and Cataloging Conferences and Their Proceedings" by Barbara L. Hendry, D-2.

"Universities and Special Libraries in Central America" by Helen F. Redman, D-2.

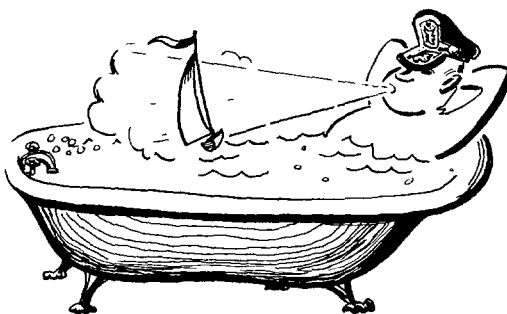
Panel Discussion on "Public Relations and Library Service" led by Lois Godfrey, D-2.

Libby-Cockroft Graphite Chemistry Meeting, Harwell, England, April 25-27:

"Graphite Corrosion in the Region of Gas Film Control" by Peter G. Salgado, K-4. (Invited Paper)

# 20

## YEARS AGO



Culled from the May 1946 files of the "LOS ALAMOS TIMES" by Robert Porton

### Bathtubs Set for 300 New Dwellings

Bathtubs for the 300 permanent dwellings soon to be constructed on the golf course were assured this week by Lt. Col. W. A. Stevens, Post Commander. "Community planners will plan on a bathtub for every permanent unit," Col. Stevens announced. This was the best news received by Hill householders since the inception of the project. Except for the occupants of the ten "Bathtub Row" units, which are equipped with tubs, residents have had to get along with showers.

### "Trinitite" Data Sought by Director

An accounting of personal stocks of "Trinitite" was sought this week in a notice to Tech Area employees from Dr. Norris E. Bradbury, Project Director, warning employees against having the material in their possession without having cleared it through the proper channels. "Trinitite" is the activated fused sand, resembling green glass, which resulted from the "Trinity" test last July at Alamogordo. Persons possessing "Trinitite" were requested to inform the Security Office of that fact and indicate the amount of material they have. Possession of "Trinitite" is not in itself dangerous, the Director pointed out, but improper handling of the material over a period of time could result in injury.

### Eight Hospitalized by Rays

Eight members of the Los Alamos Atomic Bomb Laboratory were exposed to radiation, one possibly seriously, in an accident occurring during work with fissionable material last Tuesday. Seriously exposed to radiation was Dr. Louis Slotin, Canadian scientist. There were seven others exposed to radiation in varying degrees in the mishap, all of whom were expected to be released from the hospital here after a thorough check and a period of observation. (Editor's Note: Dr. Slotin died on Memorial Day, 1946.)

### Not Retrieved

Timothy Tiger, possibly the only retrieving cat on the Hill, is missing—and the John V. Young family at 186-C is very unhappy. Timmy is a young cat of medium size, two-tone gray Persian variety, neuter gender. Rolling marbles, wads of paper, and pieces of crinkly cellophane are Timmy's particular delight in his retrieving game. The person retrieving the retriever and returning him to his young guardians, Judy and Molly Young, 6 and 3, respectively, will win the undying gratitude of the children, the great thanks of Mrs. Young, and a reward from John Young.

## what's doing

**EXHIBITION:** Lobby and corridors of Personnel Department, Building SM 123 (open area), 20 oils and watercolors from Stables Gallery in Taos. Mondays through Fridays, 8 a.m. to 5 p.m., until June.

**FILM SOCIETY:** Civic Auditorium. Admission by single ticket, 90 cents. Tickets available at the door.

Wednesday, May 18, 7 and 9 p.m.—  
"Zazie" French comedy fantasy (1962) directed by Louis Malle, described as "exceedingly funny in a bold, delicate, freakish, vulgar, outrageous and occasionally nightmarish way." Story concerns adventures of a formidably outspoken 11-year-old who goes to Paris for a brief stay and turns the city upside down and starts shaking all sorts of coarse and unexpected wonders from its pockets. 85 minutes.

**PUBLIC SWIMMING:** Los Alamos High School Pool, Adults 35 cents, children 15 cents. Saturday and Sunday 1 to 6 p.m. Monday, Tuesday, Wednesday and Thursday, 7:30 to 9:30 p.m.

**OUTDOOR ASSOCIATION:** No charge, open to the public. Contact leader for information regarding specific hikes.

Thursday, May 5, meeting at home of Mrs. Pauline Ungnade, 1489 42d Street.

Saturday, May 7, Stone Lions from St. Peter's Dome. Roger Perkins, leader.

Thursday, May 12, night hike. Betty Hansbury, leader.

Thursday, May 19, night hike. Ken Ewing, leader.

Saturday, May 21, Cerro Palado from House Ranch. Family hike, 10 miles maximum. Bob Skaggs, leader.

Tuesday, May 24, night hike. Barbara Skaggs, leader.

**ST. JOHN'S COLLEGE FILM SOCIETY,** Great Hall, Student Center, Santa Fe. Films shown at 7:30 p.m. Single tickets \$1, available at door.

Saturday, May 7—"The Virgin Spring," directed by Ingmar Bergman (Sweden, 1960). Emotional drama set in Fourteenth Century Sweden with conflicts of human values that have become characteristic of Bergman's films.

Saturday, May 14—"Desert Victory," filmed by British combat photographers (England, 1943). Documentary records the desert war between the British Eighth Army and Rommel's Afrika Korps across 1300 miles of North Africa. An Academy Award winner.

Saturday, May 21—"Hamlet," the second of Laurence Olivier's film productions of Shakespeare (England, 1948).

Saturday, May 28—"The Bank Dick," a 1940 U.S. comedy in which W. C. Fields registers a great performance as a droll character who has failed to conform to all accepted conventions, but eventually achieves success through pure chance.



With the gentle handling due a competent but retired performer, Zia riggers unload Godiva II at the LASL Science Exhibit Hall and Museum, where the critical assembly machine has been placed on display. Godiva II was used at Pajarito Site to create bursts of energetic neutrons resembling aspects of a nuclear detonation. The device was designed by Group N-2 to reproduce a phenomenon that

was recorded in 1957 during an unexpected criticality with Lady Godiva, the lab's first unclad assembly. Although her original heart of uranium 235 has been replaced with something less active, Godiva II is still animated and operates for visitors at the push of a button. Lady Godiva, meanwhile, is being prepared for permanent exhibition in the Smithsonian Institution museum in Washington, D.C.

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